DOCUMENT RESUME

ED 282 740 SE 048 163

TITLE	Ohio EPA Teachers Kit.
INSTITUTION	Ohio State Environmental Protection Agency, Columbus.
PUB DATE	Feb 87
NOTE	36p.; Document colored handout pages.
PUB TYPE	Guides - Classroom Use - Guides (For Teachers) (052)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Community Involvement; Conservation (Environment); Elementary Education; *Elementary School Science; *Environmental Education; Field Trips; Hazardous Materials; Interdisciplinary Approach; Natural Resources; *Pollution; *Science Activities; Science and Society; Science Education; *Science Instruction; *State Agencies; Wastes
IDENTIFIERS	*Ohio Environmental Protection Agency

ABSTRACT

In an effort to provide teachers in Ohio with assistance in environmental education, the Ohio Environmental Protection Agency (EPA) has produced this teachers kit. It is designed to describe what the Ohio EPA is doing to protect Ohio's air, land, and water. The background information provides an historical account of some of the events that have taken place in the past 20 years, and describes the Ohio EPA's current efforts in the areas of air, land, and water pollution control, as well as the agency's emergency response program. This guide includes: (1) suggested projects and activities for students in the elementary grades; (2) a list of suggested field trips; (3) ideas for community participation; (4) a description of the Ohio EPA speakers bureau; (5) a list of other Ohio EPA brochures available and planned; (6) addresses and phone numbers of local air pollution control agencies; and (7) a list of other organizations and agencies involved in environmental education. (TW)

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OhioEPA
State of Ohio Environmental Protection Agency

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

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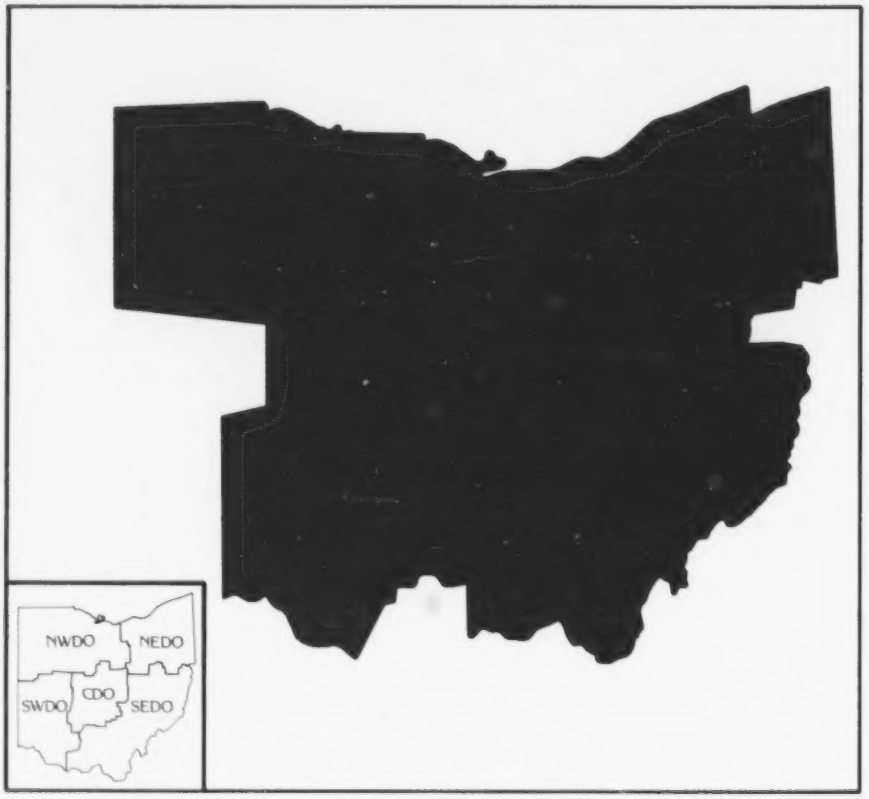
"Ohio's future prosperity depends on our natural and physical assets—and on the intelligence with which we use them. Our quality of life in the 1980's and beyond will be determined to a great extent by our ability to preserve and invest in our rich environment."

Richard F. Celeste, Governor

preface

More than ten million people live in the State of Ohio, and each one depends on Ohio's environment—the air we breathe, the water we drink, the ground upon which we build our homes and grow our food. Keeping that environment clean and healthy is the job of the Ohio Environmental Protection Agency. This publication will introduce you to Ohio EPA—tell you who we are, and what we do to make Ohio a better place to live.

Ohio EPA's Central Office is located in Columbus, a few blocks from the Statehouse. The Agency has five district offices as well, to manage our State's pollution control programs efficiently at the local level. If you ever have a problem or a question dealing with Ohio's environment, get in touch with us. We care about Ohio's environment.



Central District Office
P.O. Box 1049
361 E. Broad St.
Columbus, Ohio 43266-1049
614/466-8565

Northeast District Office
2110 East Aurora Road
Twinsburg, Ohio 44087
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Northwest District Office
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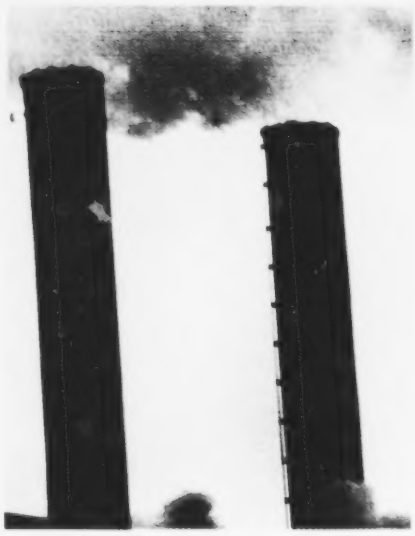
Bowling Green, Ohio 43402
419/352-8461

Southeast District Office
2195 Front Street
Logan, Ohio 43138
614/385-8501

Southwest District Office
7 East Fourth Street
Dayton, Ohio 45402
513/449-6357

history



The 1970's were often referred to as the Decade of the Environment. Expressions of concern about environmental issues like air and water pollution dominated the 70's. On April 22, 1970—the first Earth Day, in presentations across the country, conservationists, scientists, and other committed individuals called for a new consciousness, a new awareness that our natural resources had been damaged and needed to be restored. Their call was heard, and the environmental movement was underway.

For the most part, this was a radically new perspective. Historically, people gave little thought to how they used—or abused—the environment. Ohio's early inhabitants, the American Indians, burned as much of their waste as they could, causing thick clouds of smoke. The rest they simply piled up, and when the trash heap became unmanageable, they moved on to a new location. Their successors, the frontiersmen, began Ohio's strong agriculture industry—but at the expense of the forests, which they cut down, and the streams, which they used as a convenient dump.

Ironically, Ohio's natural resources—especially our abundance of water and our geographic location near navigable waterways like Lake Erie and the Ohio River—made the State a prime location during the Industrial Revolution. Our ample coal resources brought our State both miners and fuel for our factories. The foundations of Ohio's industrial base were laid.

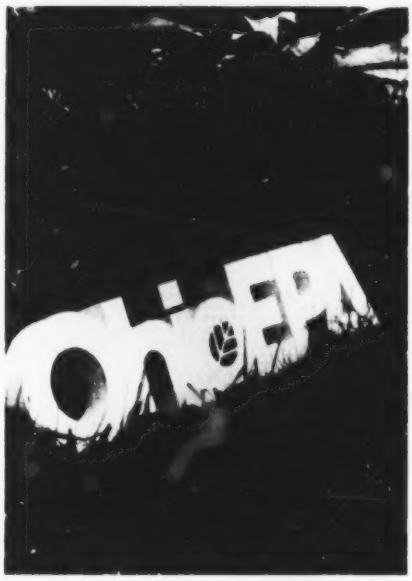
history

But at the same time that they supplied valuable energy, Ohio's coal mines began to seep acidic pollutants to nearby streams. And with the steel mills came air pollution; orange and black smoke billowed almost continually from the huge smokestacks, increasing respiratory ailments and damaging buildings.

By the late 1960's, it was clear that Ohio's environment was in trouble. Steubenville, Youngstown and Cleveland had some of the dirtiest air in the nation. Formal air pollution alerts were a monthly occurrence. The Cuyahoga River, covered with a thick sheen of oil, caught fire, and large portions of every major river in the State were septic—black and smelly, and unable to support fish life. The beaches along Lake Erie were closed because raw sewage in the Lake posed a health hazard. Even the drinking water was affected; the federal government declared that a large percentage of Ohio's public water supplies failed to meet safe drinking water standards. Ohio was not unique, however. Virtually every state in the country was experiencing environmental problems.

The time was right for a commitment to begin giving our environmental resources the respect they deserved. The support for such a commitment expressed on that first Earth Day became stronger and stronger throughout the Decade of the Environment. In response, many important initiatives were undertaken:

- *On December 2, 1970, Congress created the U.S. Environmental Protection Agency.*
- *On October 23, 1972, the Ohio Environmental Protection Agency was formed.*
- *The Clean Air Act, the Clean Water Act, and the Safe Drinking Water Act established a national program for pollution control.*



- *Ohio's General Assembly passed its own laws to protect our environment and restore our natural resources.*

The "Decade of the Environment" may be over, but concern for pollution control is not. Public sentiment runs more strongly than ever in favor of a clean, healthy environment. Survey after survey continues to indicate that while public opinion on many social issues has shifted over the years, support for environmental protection programs continues to grow. Ohioans—like citizens across the nation—want a clean environment for themselves and their families.

history

It is the responsibility of the Ohio EPA to make sure this public mandate is carried out. And much has been done since the Agency's creation in 1972 to fulfill this responsibility. Today, Ohio has:

- *One of the nation's most extensive air monitoring networks*
- *Strong hazardous waste laws*
- *The first system in the nation for tracking compliance with pretreatment rules for toxic water discharges*

Our rivers are cleaner. Lake Erie is alive and well, and supports a booming sports fishing industry. There hasn't been an air alert anywhere in Ohio in years. Ohio's environment is cleaner, and our quality of life has improved. But the work is not finished.

This publication tells the story of how our progress has been achieved. It also tells about new pollution control challenges, and how Ohio EPA plans to meet them.

From 1972 to the present, our goal has remained the same—to protect Ohio's air, land, and water. Our commitment to Ohio's people remains the same as well—to work hard today toward a cleaner and healthier tomorrow.

air

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air

The need to protect the public from the harmful effects of air pollution has long been recognized. In the early 1970's, when Ohio EPA was first created, the effects of Ohio's heavy industrial activity, coupled with an increase in the number of automobiles on the road, meant that more than 4 million Ohioans were breathing unhealthy air.

To control air pollution and protect public health, the 1970 Federal Clean Air Act and Ohio's own state law assigned specific responsibilities to government and industry. The Act also established clean air standards for six priority pollutants. These pollutants include:

1. **Sulfur Dioxide** (SO^2)—a colorless gas formed primarily from the burning of coal and oil.
2. **Particulates**—any liquid (aerosol) or solid substance (dust matter) found in the atmosphere and formed as a result of various chemical and physical processes.
3. **Carbon Monoxide**—a colorless, odorless, poisonous gas which originates primarily from automobile exhaust.
4. **Lead**—a toxic, heavy metal emitted primarily from automobiles due to lead additives in gasoline. Industrial sources of airborne lead include metal finishing and metal alloy processes.
5. **Nitrogen Dioxide**—a poisonous, reddish-brown gas emitted into the air through high temperature combustion processes.
6. **Ozone**—a gas which is formed when nitrogen oxides and certain hydrocarbons react with sunlight. Produced from automobile exhaust and industrial process, ozone is commonly referred to as smog.

Because of its strong industrial base, sources of air pollution in Ohio have typically been iron and steel operations, electric power generating stations and other coal burning operations, as well as numerous commercial manufacturing facilities. Exhaust from automobiles also contributes significantly to Ohio's air problems.

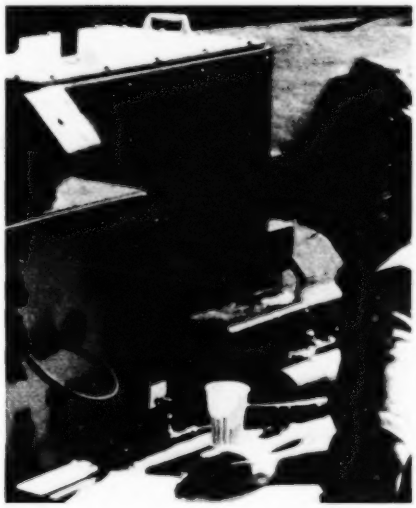
air

In Ohio, the requirements of the federal and state clean air laws are carried out by Ohio EPA's Division of Air Pollution Control in conjunction with several local air pollution control agencies. The Division is responsible for monitoring air quality, investigating complaints, processing air pollution control permits and air resource planning. Ohio has one of the largest air monitoring networks in the country, with more than 350 monitors collecting data year round. With the addition of a computerized network of monitoring stations, our data collection effort has been further enhanced.

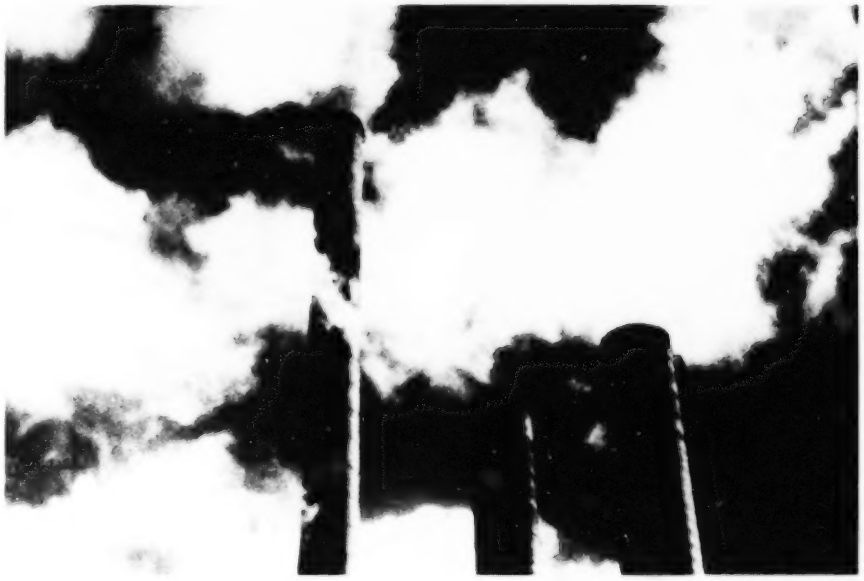
Ohio EPA's air pollution control permit program provides the major tool for making sure that each air pollution source is in compliance with clean air requirements. More than 12,000 renewable permits have been issued to Ohio industry for the construction and operation of air pollution sources. They set limits on the amount of pollution that may be emitted. If a violation does occur, the Director can issue formal orders to require the violator to correct the problem by a certain date. In cases where violations continue, the Director may choose to ask the Ohio Attorney General to represent Ohio EPA in further enforcement action.

An important component in controlling motor vehicle emissions is the statewide automobile fuel switching and tampering program. Fuel switching occurs when leaded gasoline is used in cars designed for unleaded fuel. Both fuel switching and tampering with emission control devices can cause increased air pollution. Nearly 1,800 service stations are inspected annually for compliance with federal anti-tampering/anti-fuel-switching regulations.

The Division has developed a state plan to enforce federal regulations to control hazardous air pollutants such as beryllium, mercury, vinyl chlorides, benzene and asbestos. The detection and control of asbestos fibers in insulation and building materials is a major concern. Building renovation and demolition sites throughout the state are inspected at random to insure that proper asbestos removal and disposal procedures are followed.



Better Air Quality: While the control of air pollution continues to be a major concern, many improvements have taken place in Ohio in recent years. Ohio industry has spent approximately $1.5 billion on equipment to control air pollution. As a result of these efforts, Ohio's air quality has improved substantially. Additional improvements have taken place due to the large decrease in the open burning of trash and leaves, and the gradual replacement of older cars and trucks with newer, pollution controlled vehicles.



air

The latest air monitoring data shows that the quality of Ohio's air has improved in every major urban area. This improvement includes a 740,000 ton reduction in the amount of sulfur dioxide (SO^2) being emitted each year from coal-fired power plants. Because of this, Ohio is meeting the federal SO^2 air quality standards. Studies are now being conducted to find new ways to clean the high sulfur coal mined in Ohio before it is burned, so that it can be used in an environmentally sound manner. This will help to further reduce SO^2 emissions, believed to contribute to "acid rain."

Emergency Planning: The Division of Air Pollution Control is also providing technical assistance to a voluntary community contingency planning program designed to assess the possibility of a toxic chemical release so that local governments can be prepared in the case of an emergency. The goal of the program is to encourage preparedness planning so that decisive and appropriate action can be taken in such an emergency.

Computerized Monitoring: Future air pollution control programs and research techniques will be assisted by a new $250,000 computerized air monitoring system known as the Remote Ambient Data System. This system is designed to automatically transmit air quality data from monitors throughout the State. The Remote Ambient Data System generates daily reports and has the ability to store data for two months. In addition, the system will assist in developing air quality trends and will readily provide the Agency with data in the case of an air emergency.

While the quality of Ohio's air has shown a marked improvement over the last decade, more work lies ahead. The Agency will continue its air quality improvement efforts and will rely on the help of industry and concerned citizens to help meet clean air goals.

land

land

The State of Ohio is 41,009 square miles in size. That's enough land for over 24 million football fields or more than 186 million Olympic size swimming pools. Ohio's land supports 90,000 farms, provides space for more than four million homes, and holds the sites of 17,000 manufacturing plants. And there is room to spare—enough for 209,761 acres of State parks and hundreds of private recreational areas.

Places to live, to work, to play. Clearly, Ohio's land is one of its most valuable assets.

Unfortunately, we have not always recognized the value of land as a natural resource, and so we haven't done as much as we really should to preserve and protect it. Land pollution can come from many sources, even from excessive lead emissions from automobile exhaust, but the most common source is improper disposal of waste materials. Over the years, both hazardous waste and solid waste have been indiscriminately dumped onto Ohio's soil.

From the days of the American Indian, the most prevalent method of solid waste disposal was the open dump. Trash and garbage were simply piled up in an open field or ditch. Often, the trash heap would be set on fire to reduce the volume. In addition to polluting the land, open dumps caused air pollution when they were burned and water pollution when rain water and other precipitation picked up contaminants from the dump and then ran into a stream or seeped into the soil to the groundwater below.

Solid Waste: When Ohio's solid waste law was enacted in 1967, there were more than 1,300 smelly, unsightly, vermin infested open dumps in Ohio. Since that law made them illegal, Ohio EPA, working with local health departments across the state, has virtually eliminated open dumps in the State. In their place, we have over 200 licensed sanitary landfills and a variety of alternative disposal facilities such as

land

recycling centers and trash burning power plants.

Today, however, Ohio has a new problem. Forty of our 88 counties will run out of landfill capacity within the next few years; several have done so already. If waste from these counties were simply sent to Ohio's remaining landfills, every landfill in the State could be filled to capacity in twelve years. Simply put, we are running out of safe places to put our garbage.

New landfills are difficult to site for several reasons. For one thing, Ohio EPA has strict geologic criteria that spell out what kind of land is environmentally suitable for a landfill. A geologically acceptable site can be difficult to find. But even when a proposed site meets the geologic standards, there is usually public opposition to a new landfill. The history of open dumps and older, poorly operated sites has made the public mistrustful if not openly hostile. This has resulted in a "not in my backyard" (NIMBY) attitude.

A properly constructed, well operated landfill need not be a public nuisance. The Agency's solid waste regulations require that waste materials be compacted and covered daily with at least six inches of soil to minimize odors, control blowing litter, and discourage the presence of pests such as rats and flies.

To help address the growing solid waste crisis in Ohio, the Agency is working with local officials in the affected counties to develop long range solid waste plans. Ohio EPA also encourages recycling and other alternatives to land disposal. Our goal is to reduce Ohio's dependence on sanitary landfills, and to make sure that those landfills we do need are sited, constructed, and operated in an environmentally sound manner.

Hazardous Waste: National attention has been focused on the hazardous waste problem in recent years. The Resource Conservation and Recovery Act established nationwide regulations, effective in late 1980, for the management of hazardous waste "cradle-to-grave," from creation to final disposition. In Ohio, Senate Bill 269 (October, 1980), House Bill 506 (June, 1984), and House Bill 445 (December, 1985) provide the basis for a strong regulatory program for hazardous waste management.

Each year, more than three million tons of hazardous waste are generated in Ohio. Ohio's regulations require the companies that create this waste (called "generators") to file yearly reports telling the amount and type of waste they produce, and where it goes. Firms which transport waste must register with the Public Utilities Commission of Ohio (PUCO). Both generators and transporters must follow rules for proper packaging and labeling of waste materials. When a shipment of waste is made, it must be accompanied by a shipping document called a "manifest" which tells what is in the shipment, the size of the shipment, and the intended destination. A copy of the manifest is returned to the generator as proof that the shipment arrived safely. The manifest is the key to the "cradle-to-grave" tracking system.

land

Ohio has about 200 facilities that have permits to store hazardous waste for more than 90 days, treat the waste, and/or dispose of it. Many of these are manufacturing facilities that store their waste right on their own property until it is shipped elsewhere for processing. Less than a dozen are major commercial facilities that accept waste from other companies for treatment or disposal.

Permits for hazardous waste facilities are issued by the Hazardous Waste Facility Board, a separate entity from Ohio EPA. However, the Agency does handle routine permit renewals and revisions. Companies that wish to make a major change in their waste handling procedures must go before the Board for review.

Recycling is just as important in regard to hazardous waste as it is for many familiar waste materials like newspapers, glass, and aluminum cans. But many people are unaware of the opportunities for recycling hazardous waste. To help Ohio's generators recognize the value of hazardous waste recycling, Ohio EPA joined the Northeast Industrial Waste Exchange. This non-profit clearinghouse helps to put waste generators in touch with other businesses that can use the waste as a raw material.

The Agency has also sponsored a study of preferred management options for the kinds of hazardous waste created in Ohio. Ohio companies can use this information to choose the most environmentally sound way of dealing with their hazardous waste. A recent policy allows the Agency to disapprove hazardous waste headed towards a traditional disposal site if that waste can be recycled or reused.

Violation of Ohio's hazardous waste regulations is a felony. The law provides for civil penalties up to $10,000 per day of violation, and criminal penalties up to $25,000 per day of violation ($50,000 for a second offense) and/or up to two years in jail. Ohio EPA has a Special Investigations Unit, trained in surveillance techniques, that works closely with the Ohio Attorney General's Bureau of Criminal Investigation to detect and investigate violations of hazardous waste laws.

In May of 1984, Ohio EPA and the Attorney General's Office negotiated the largest state settlement of an environmental case in U.S. history, when Chemical Waste Management agreed to pay $10 million in fines and spend $10 million to upgrade its facility in northwest Ohio.

The regulations in effect today help ensure that hazardous waste is handled properly now and in the future. But we still have to deal with the problem of wastes that were improperly disposed of in the past. Ohio has over two dozen sites on the federal Superfund list, and numerous other sites that didn't qualify for federal cleanup funding, but still need attention.

Our progress in cleaning up problem hazardous waste sites has been good. Ohio has received more than 20 Superfund grants, totalling over $11 million. Companies that sent waste to the Summit National site in Portage County, once Ohio's worst, paid nearly $3 million for surface waste removal, a project that was completed in June, 1982. At the State's other major site, Chem-Dyne in Hamilton, the generators agreed to conduct a $21 million cleanup that will include a 30 year groundwater purification project. In all, over 20 Ohio sites have been cleaned up without the use of State tax dollars.

Ohioans enjoy an enviable standard of living, thanks to the many consumer goods our industries provide. Ohio EPA strives to manage the unwanted by-products of our manufacturing processes, so that we can continue to have the goods and services we value without harming our environment.

water

water

Ohio is fortunate to have an asset envied by other states—water, and lots of it. Ohio has 44,000 miles of rivers and streams and more than 60,000 lakes, ponds, and reservoirs. Our State is bordered by water on three sides—by the great Ohio River on the east and south, and by Lake Erie on the north. Ohio's portion of Lake Erie covers nearly 3,500 square miles. Ground water is also abundant; there are 28 major aquifers in Ohio, with at least one in every geographic area of the State. We depend on water for economic development, transportation, recreation, and drinking water. Our challenge at Ohio EPA is to protect this abundant resource from contamination.

In 1972, Congress passed the Clean Water Act to restore and maintain the quality of the nation's waters. The law established national cleanup goals, assigned specific responsibilities to state governments, and authorized funding by the federal government to carry out water pollution control programs. Ohio EPA's Divisions of Water Pollution Control and Water Quality Monitoring and Assessment are responsible for carrying out the goals of the Clean Water Act in Ohio, as well as the State's own water pollution control laws.

Section 201 of the Clean Water Act provides for federal grants for a portion percent of the cost of improving or building wastewater collection and treatment systems. In Ohio, this program is administered by the Division of Construction Grants. To date, grants in excess of $2.4 billion have been awarded to Ohio communities. In mid-1986, Congress was debating the future of this program.

The federal Safe Drinking Water Act was passed in 1974. It was the first legislation to call for nationally enforceable drinking water standards, and is enforced in Ohio by the Division of Public Water Supply.

water

Surface Water: Sources of surface water pollution fall into two categories: point and non-point. Industrial and municipal wastewater discharges are called point sources because they are known sources that come from a specific point-pipes or sewers. There are also non-point sources, such as agricultural runoff and acid mine drainage, where the discharge does not come from a controlled point.

Point sources are regulated through a permitting process known as the National Pollutant Discharge Elimination System (NPDES). This system requires all dischargers to receive a permit that restricts the amount and kinds of pollutants they can discharge into navigable waters. In Ohio, more than 4,400 point source dischargers have NPDES permits. Any facility with an NPDES permit faces possible enforcernent action if it fails to comply with the requirements in its permit.

Ohio EPA also has a statewide program that requires industries to pretreat toxic discharges before allowing them to enter sewage treatment systems. This provides for better control of water pollution, since many sewage treatment plants are not designed to remove toxic pollutants. In Ohio, 100 communities participate in the pretreatment program. In 1986, this program received an award from U.S. EPA for its effectiveness and its overall management. Ohio's electroplating industry has one of the highest compliance rates in the nation with state and federal standards for pretreating its wastewater discharges. The overall compliance rate in Ohio is more than 70 percent; for most states it is well over 50 percent.

One of the Agency's water pollution control goals is to continue to reduce the amount of phosphorus going into Lake Erie. Historically, phosphorus from fertilizer and industrial and municipal wastes has been the biggest environmental insult to the Lake. Installation of phosphorus removal facilities at sewage treatment plants tributary to the Lake has already resulted in a dramatic decline of phosphorus discharges. Additional reductions can be made by encouraging conservation methods (such as no-till farming) that reduce soil erosion and fertilizer runoff.

This ties in with another goal, which is to encourage land management practices that reduce soil erosion and water pollution. More than 85 million tons of soil erode annually in Ohio. Much of this soil ends up as sediment in our

water

lakes, rivers, and streams, degrading water quality and costing tens of millions of dollars to remove. In the future, the priority will shift from dredging sediment to preventing erosion in the first place.

The Division of Water Quality Monitoring and Assessment maintains a network of long-term surface water monitoring stations to provide data and detect changes in water quality. Other short-term monitoring efforts help provide information to research specific issues and citizen complaints. Ohio's biological and water quality survey program—which includes the collection of water quality information and the sampling of fish and invertebrate species in Ohio's streams—is among the most ambitious in the nation.

Ground Water: Water that is found below the surface—ground water—is also subject to contamination from such things as sanitary landfills, hazardous waste, septic tank seepage, brine, and underground injection wells. Contaminated ground water is difficult and costly to clean up, making its protection a significant and growing concern in Ohio.

Forty percent of Ohio's population uses ground water for drinking and household uses. Three of Ohio's 11 largest cities—Dayton, Canton, and Springfield—use ground water exclusively. To preserve the generally high quality of Ohio's ground water, a protective strategy is necessary. The Agency's ground water geologists assess hydrogeological conditions around proposed land disposal sites to make sure they are properly sited and designed so as to prevent ground water contamination. Existing sites are reviewed to see if they are causing ground water contamination. Because ground water is so hard to clean up, prevention of contamination is the preferred strategy.

The future holds an increased emphasis on a comprehensive strategy to prevent ground water pollution and on the development of an adequate ground water data base to properly manage this valuable resource.

Drinking Water: Ohio has more than 1,600 community water systems serving more than 9 million people. In order to ensure that Ohioans have clean, safe drinking water, community water systems must send bacterial sample results from a certified laboratory to Ohio EPA each month. Some systems also must send results for certain organic chemicals. Enforcement action is taken against water supplies that fail to monitor. The Division of Public Water Supply also works with nearly 1,000 schools and major (serving more than 1,000 people) non-community supplies, in addition to monitoring the fluoridation practices of more than 300 community water systems.

Ohio EPA also conducts inspections of public water supply systems to assure proper operation and maintenance. Large water supplies are inspected every year. Others are surveyed once every three years. The General Assembly has made funding available for inspections of additional non-community water supplies beginning in mid-1986.

Ohio's water resources are plentiful. As long as we work to achieve and maintain their high quality, we will be assured of the many benefits they provide all of us.

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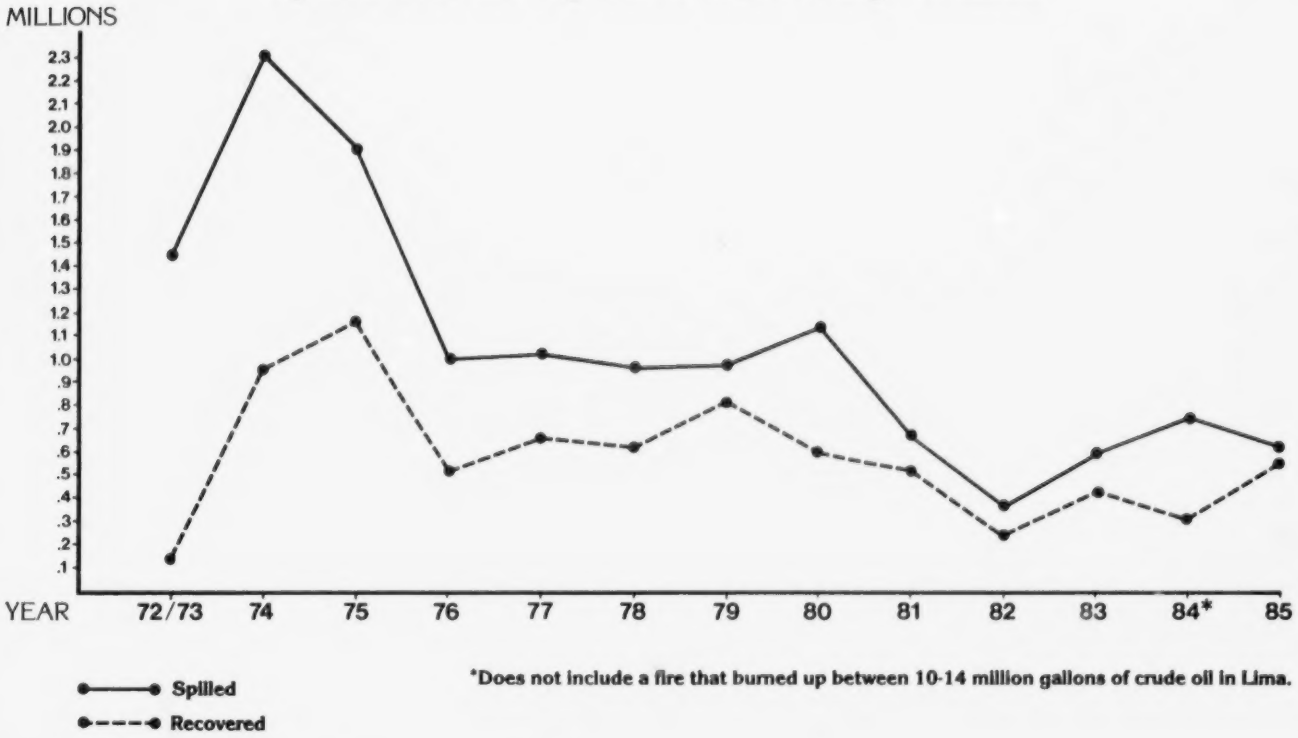
Because environmental emergencies can occur at any time throughout the State, the Agency's Emergency Response team is on call 24 hours a day to protect Ohio's citizens and its natural resources. With personnel located in each of the Agency's district offices, team members are able to respond quickly to local emergency needs. When a spill occurs, Emergency Response coordinates the efforts of other emergency personnel such as local police and fire units, the responsible party, and the cleanup crew to minimize environmental damage and return the environment to its pre-spill condition. Over 95% of all known spills are cleaned up cooperatively, with the spiller assuming liability for mitigating the effects of the spill.

When the Ohio EPA was created in the early 1970's, the number of spills reported in Ohio averaged about 800 per year. Today, that number is over 4,000 due to increased public awareness, the installation of two toll-free environmental hotlines, and better company reporting. Emergency Response (ER) is committed to responding to all major or priority (life-threatening) spills immediately and to 50-70% of all medium-sized spills within 24 hours of notification. In carrying out this commitment, ER works in cooperation with other Agency divisions, local fire and police departments, the State Highway Patrol, the State Fire Marshal, the Ohio Department of Natural Resources and others.

Hydrocarbon Spills & Recovery Trends

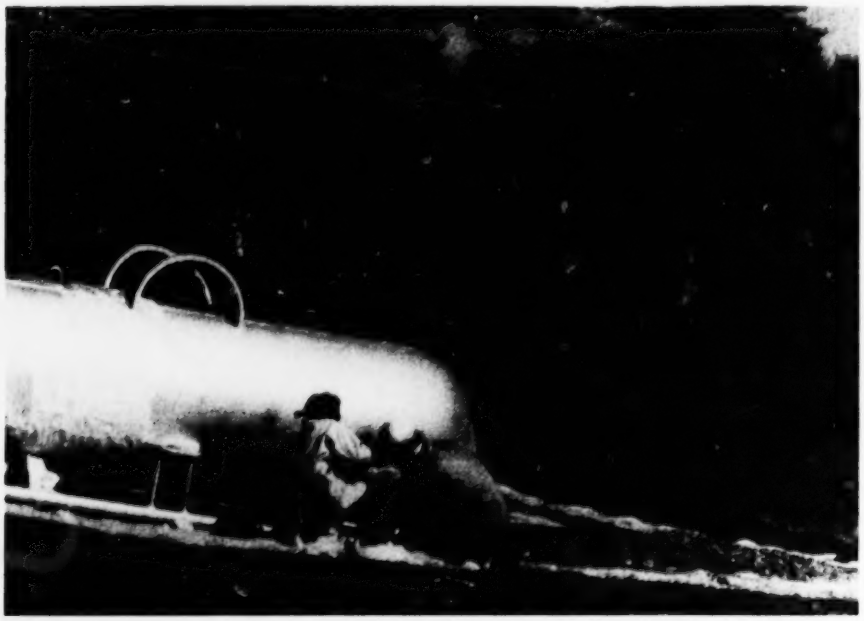


*Does not include a fire that burned up between 10-14 million gallons of crude oil in Lima.

Another important responsibility of the Agency's Office of Emergency Response is training and technical assistance. Since 1976, the Agency has co-sponsored an annual Inland Spills Conference to train local governments, businesses, and others in spill prevention and response. Presentations are also given on a regular basis to fire departments, colleges, conferences and other groups. ER has provided training and technical advise to communities interested in setting up their own spill response team, and handles over 500 requests for technical assistance each month.

Transportation Spills: Spills can occur as a result of transportation of materials. Transportation incidents include truck wrecks, transfer spills, pipeline leaks, railroad accidents, and pesticide misapplication. Truck wrecks account for the highest number of transportation spills. However, through improved communication with the State Highway Patrol, the State Fire Marshal, and the Public Utilities Commission of Ohio (which licenses commercial trucking operations), more spills are being reported to the Agency, and therefore are being responded to more quickly.

Fixed Facility Spills: The majority of spills reported occur at fixed facilities, such as industrial plants, commercial operations, oil and gas wells, and underground storage tanks. The cleanup of underground spills, such as leaking underground storage tanks, is very time consuming and requires costly specialized sampling, monitoring, and mitigation techniques. Surface spill cleanups are handled by stopping the source of the leak and containing the substance in the smallest possible area. Spills are stopped at the source by sealing off the leak, placing a dike around the source of the leak, removing the remaining material from the leaking container, or placing the leaking drum



in a larger container, called an "overpack" drum.

If the material spilled is oil, it can be vacuumed off the surface of a stream and/or soaked up with absorbent materials. If the material is a chemical, it may be chemically neutralized, absorbed into another material, physically removed, biologically degraded or cleaned up by a combination of all of the above.

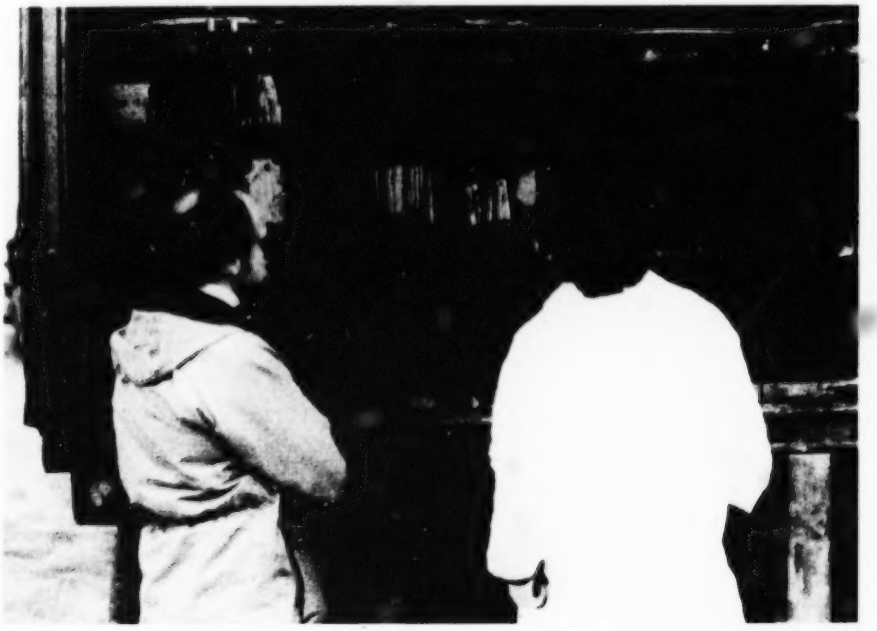
Spill Prevention: The majority of spills reported have historically been hydrocarbon materials: crude oil, gasoline, fuel oil, kerosene and other heavy petroleum oils. Today, however, due to the effectiveness of the federal Spill Prevention Control and Countermeasure (SPCC) program, hydrocarbon spills have been greatly reduced in size. The SPCC program requires anyone storing more than 660 gallons above ground in one tank or 1,320 gallons total in multiple tanks to provide spill containment. The program also requires anyone storing more than 42,000 gallons of hydrocarbon underground to prepare a spill prevention plan.

While the number of hydrocarbon spills has decreased, the number of chemical spills reported has increased in recent years. This reflects an increased awareness of chemical spills; the Agency believes that more spills are being reported because the public is more aware of the possible effects of such spills. Chemical spills are covered by several regulations, each having their own reporting requirements. The Toxic Substance Control Act requires polychlorinated biphenyl (PCB) spills to be reported. The Clean Water Act requires reporting when a hazardous substance is spilled into a waterway. And the Comprehensive Environmental Response Compensation and Liability Act

(CERCLA), also known as "Superfund", requires any spillage of hazardous wastes or hazardous substances over one pound to be reported regardless of whether the spill was to water, ground or air.

Of course, not all accidents can be prevented. To prepare local communities to react properly in the event of a chemical release, Emergency Response and the Division of Air Pollution Control are participating in a voluntary contingency planning program with the Ohio Disaster Services Agency. This U.S. EPA-initiated program has identified 403 chemicals of concern, and is aimed at helping counties, municipalities, disaster planning agencies, and other groups prepare emergency plans to be used in case of a spill.

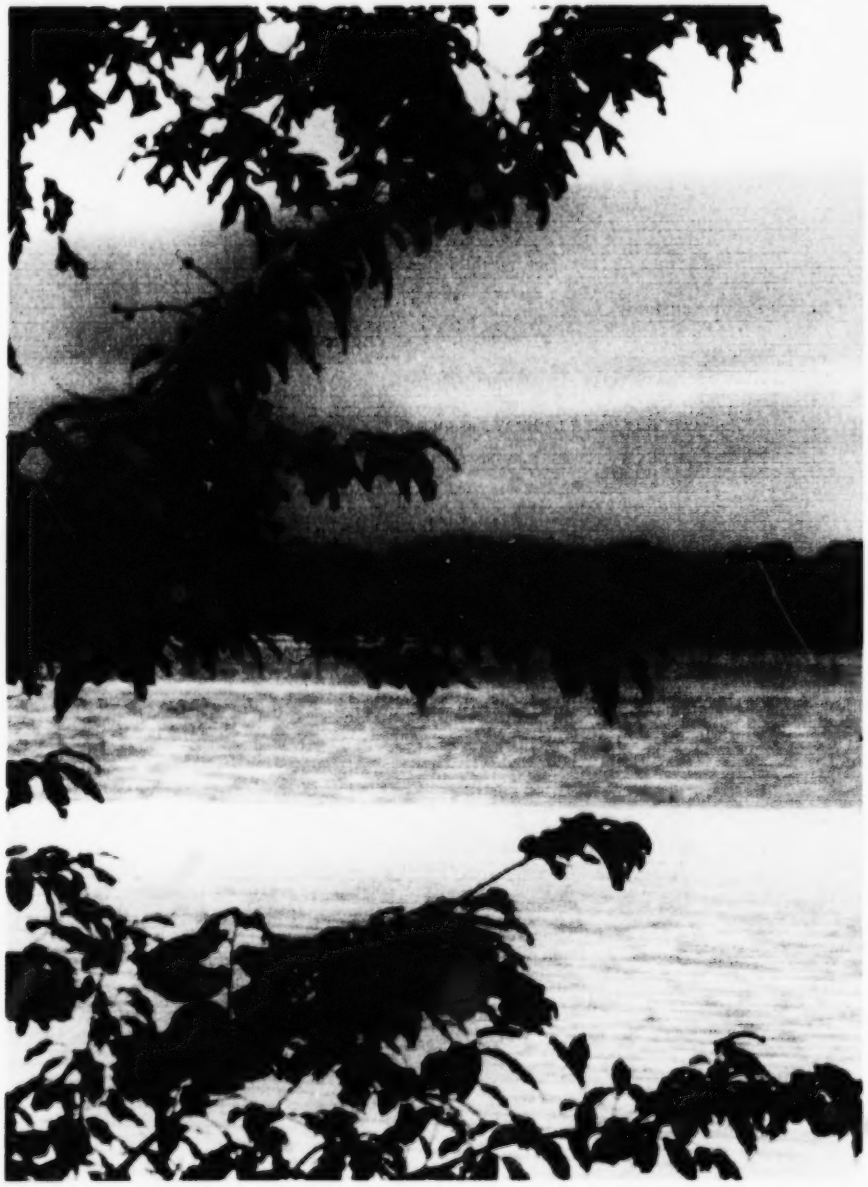
PCB Investigations: In 1981, the U.S. EPA awarded Emergency Response a grant to perform PCB compliance inspections under the Toxic Substance Control Act. PCB's are man-made chemical compounds composed primarily of carbon, hydrogen and chlorine, and are a suspected human carcinogen. Until the early 1970's, they were used in paints, inks, adhesives, varnishes, plastics, sealants, and carbonless carbon paper. Today, they remain in use primarily in electrical transformers and capacitors where their low conductivity and their resistance to fire make them valuable as coolants and as insulation fluids.



In conducting inspections for PCB-related facilities, Emergency Response is charged with checking for proper PCB use, storage, and spill clean up, and reporting violators to U.S. EPA for enforcement action. By assuring that PCBs's are being properly stored and disposed, potential contamination of the environment will be reduced and the incidence of PCB exposure to humans will be reduced.

The job of protecting Ohio's environment from the effects of hazardous materials spills grows with each passing year. Renewed emphasis on spill prevention and proper training, coupled with efficient, professional response, enables ER to get that job done.

conclusion



Ohio has tremendous natural beauty. From the striking color of Southern Ohio hills in the fall to the beauty of an ice-covered lake. From the fresh green of spring on orchards and farms to the glint of the summer sun on a clear stream. Ohio is agriculture, and industry, and recreation. And our environment is central to all.

We have misused our environment in the past, failing to appreciate and preserve its value. But during the Decade of the Environment—and ever since—we have recognized our environmental mistakes and worked to correct them.

Today, Ohio's environment is the cleanest it has been in years. But we cannot consider the job done. As our society grows and changes, new pollution problems arise. Ohio EPA, through its Office of the Planning Coordinator, is engaged in long-range planning to help anticipate these problems and be prepared to deal with them. Among the initiatives underway are the Agency's first Five Year Plan, watershed plans to set the stage for better nonpoint source pollution control, and the development of an improved system of ground water data management. And the Agency is improving its geographic, computerized information system to aid in the planning process as well as in overall pollution control analysis.

As it has been since our beginning, the Agency's goal is pollution control today for a cleaner and healthier tomorrow.

— farm (Note irrigation, pesticide use, conservation methods.)

— garden, arboretum, conservatory

— landfill (either solid or hazardous waste)

— local air agency (See map for locations.)

— strip mine (Note reclamation efforts.)

— wastewater (sewage) treatment plant

— water plant; water tower

— water well drilling operation site

— oil and gas well drilling site

— private water testing laboratory

— water resource sites (Discuss stream litter laws for rivers, lakes, and streams.)

— recycling center

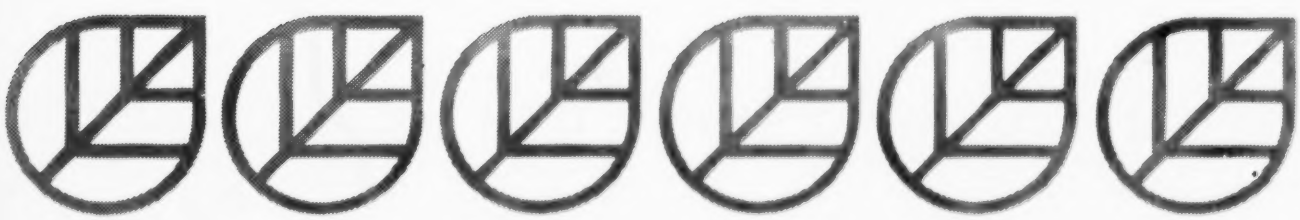
— city and state parks (Walk nature trails and participate in interpretive programs.)

— Ohio EPA Water Lab (Columbus)

— Ohio EPA Air Lab (Columbus)

— nature preserve

Contact the Ohio EPA district office that serves your county for additional information about field trip sites near you.



—Write letters to the editor of your local newspaper regarding environmental concerns.

—Plan regular litter clean-up days in your neighborhood and around your school. Take photographs before, during, and after the cleanup.

—Sponsor recycling contests between classes or schools. Glass, paper, and aluminum are items that can be recycled.

—Set up a permanent recycling center at your school.

—Take photographs of pollution in your town. Use them in a report or slide show.

—Clip newspaper and magazine articles that deal with the environment. Hang them on a special bulletin board and discuss them in class.

—Encourage your friends and family to car pool.

—Sponsor an essay, poster, or photo contest with an environmental theme.

—Form an Ecology Club and give membership certificates to participants.

—Create a Litter Patrol in every class. Each class serves for one or two weeks and is responsible for keeping the school grounds clean. Choose the best Patrol and honor it at the end of the semester.

—Encourage friends and family to conserve water.

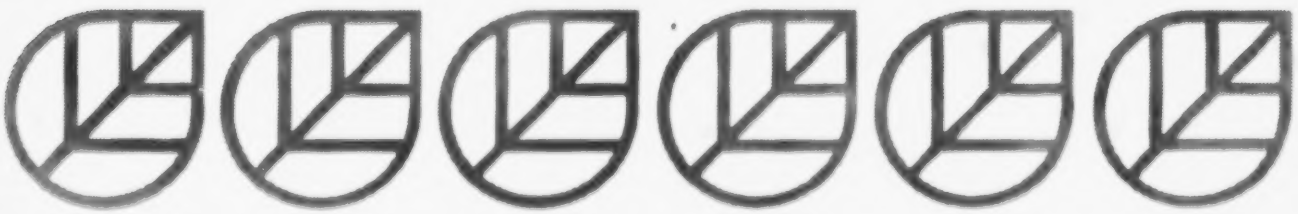
—Write to elected officials and ask them to support environmental protection measures.

—Make sure your family keeps the car tuned up.

—Don't litter.

—Try to limit the number of disposable products you use (paper plates, diapers, etc.).

—Call Ohio EPA if you see a pollution problem.



Protecting Ohio's air, land, and water is the goal of Ohio EPA. In order to make our goal familiar to as many people as possible, Ohio EPA has an active, extensive network of employees all over the state who will speak to your class on request. We welcome every opportunity to educate Ohio's children about our environment and what they can do to make it cleaner and safer. When we meet with groups of young students, we usually talk about the Agency, what we do, what causes pollution, and how the students can help. Our speakers also give presentations on a wide range of specialized subjects geared to older audiences.

To request a speaker, contact the Ohio EPA Public Interest Center in Columbus, (614) 466-8508, or the Ohio EPA District Office that serves your county.

Other professionals that may be willing to speak about subjects related to the environment include: architects, engineers, contractors, foresters, biologists, sanitation workers, horticulturists, rangers, game wardens, recycling center staff, park recreation managers, and water plant superintendents

Northeast — Twinsburg	**(216) 425-9171**
Northwest — Bowling Green	**(419) 352-8461**
Southeast — Logan	**(614) 385-8501**
Southwest — Dayton	**(513) 449-6357**

OHIO EPA BROCHURES

Available on request

Safe Disposal of Household Hazardous Waste

Composting: A Citizen's Guide to the Proper Disposal of Leaves and Other Organic Materials

Sludge: A Valuable Resource

Pollutant Standards Index

Wood Stoves and Air Pollution

Fact Sheets: Used Oil Recycling
Lake Erie
Ground Water

Items planned for publication

Ground Water booklet

Lake Erie brochure

Open Burning brochure

Freddie Freshwater (water conservation) coloring book

Eco-Tips (shows how you can help save the environment)

Hazardous Waste booklet

Environment Ohio (external newsletter)

Call or write to the Ohio EPA Public Interest Center for copies of these publications or to be put on the mailing list for "Environment Ohio."

OTHER RESOURCES

Ohio Department of Education
65 S. Front St.
Columbus, OH 43215
(614) 466-2211

Ohio Department of Natural Resources
Office of Public Information and Education
Fountain Square
Columbus, OH 43224
(614) 265-6789

Ohio Department of Development
Community Development Division,
Office of Energy Conservation
P.O. Box 1001
Columbus, OH 43266-0101
(614) 466-6797

The Ohio Alliance for the Environment
445 King Ave.
Columbus, OH 43201
(614) 421-7819

ERIC (Educational Resources Information Center)
Center for Science, Mathematics,
and Environmental Education
Ohio State University
1200 Chambers Road, 3rd Floor
Columbus, OH 43212
(614) 292-6717

Institute for Environmental Education
32000 Chagrin Blvd.
Cleveland, OH 44124
(216) 464-1775

Aluminum Company of America
Public Relations Dept.
1501 Alcoa Building
Pittsburgh, PA 15219
(412) 553-3772

Michigan Dept. of Natural Resources
Information Services Center
P.O. Box 30028
Lansing, MI 48909
(517) 373-1214

U.S. Department of Agriculture
Soil Conservation Service
200 N. High St., Room 522
Columbus, OH 43215
(614) 469-6962

U.S. EPA
Office of Public Affairs
Washington, D.C. 20460
(202) 382-4361

Washington State Dept. of Ecology
Litter Control and Recycling Program
4350 150th Ave. NE
Redmond, Washington 98052
(206) 885-1900

National Wildlife Federation
Educational Servicing
1412 Sixteenth St., N.W.
Washington, D.C. 20036-2266
(202) 797-6842

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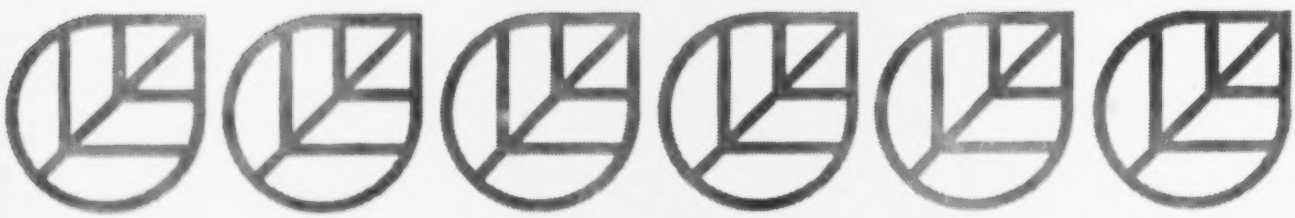

U.S. EPA, Region V
(Ohio, Michigan, Indiana, Illinois, Wisconsin)
230 S. Dearborn
Chicago, IL 60604
1-800-621-8431

Soil Conservation Society of America
7515 N.E. Ankeny Road
Ankeny, IA 50021
(515) 289-2331

Missouri Dept. of Conservation
Conservation Education
P.O. Box 180
Jefferson City, MO 65102
(314) 751-4115

Ohio Dept. of Health
Bureau of Environmental Health
246 N. High St., P.O. Box 118
Columbus, OH 43266-0588
(614) 466-1450

Virginia Dept. of Conservation &
Historic Resources
1100 Washington Bldg.
Capitol Square
Richmond, VA 23219
(804) 786-2121

American Waterworks Association
(educational materials on drinking water)
6666 W. Quincy Ave.
Denver, CO 80235
(303) 794-7711

Industrial States Policy Center
1501 Euclid, Suite 500
Cleveland, OH 44115
(216) 861-1989
("Rainbows in the Mud: An Action Curriculum
Toward Resolving Hazardous Waste
Management Issues."
Geared to junior/senior high school level.
Will be tested January-February, 1987; available
for use in 1987/88 school year.)

Local Soil and Water Conservation District
County Cooperative Extension Service
Listed in your local telephone directory under
"Government Offices—County."

Local colleges, universities, conservation clubs

LOCAL AIR POLLUTION CONTROL AGENCIES

1. Air Pollution Control
177 South Broadway
Akron, Ohio 44308
216-375-2480

2. Air Pollution Control Division
Canton City Health Department
City Hall, 218 Cleveland Ave. SW
Canton, Ohio 44702
216-489-3385 or 489-3231

3. Southwestern Ohio Air Pollution Control
2400 Beekman Street
Cincinnati, Ohio 45214
513-251-8777

4. Division of Air Pollution Control
Dept. of Public Health and Welfare
2735 Broadway Ave.
Cleveland, Ohio 44115
216-664-3500

5. Regional Air Pollution Control Agency
Montgomery County Health Department
451 West Third St.
P.O. Box 972
Dayton, Ohio 45422
513-225-4435

6. Lake County General Health District
Air Pollution Control
Administration Building
105 Main Street
P.O. Box 490
Painesville, Ohio 44077
216-357-2543

7. Air Pollution Unit
Portsmouth City Health Dept.
740 Second Street
Portsmouth, Ohio 45662
614-353-5156

8. North Ohio Valley Air Authority
814 Adams Street
Steubenville, Ohio 43952
614-282-3908 or 3303

9. Toledo Environmental Services Agency
26 Main Street
Toledo, Ohio 43605
419-693-0350

10. Mahoning-Trumbull APC
9 West Front Street
Room 107
Youngstown, Ohio 44503
216-744-1926 or
216-742-8700 ext. 394

DISTRICT OFFICES

CDO — Central District Office
361 East Broad Street
Columbus, Ohio 43266-0558
614-462-8291

NEDO — Northeast District Office
2110 E. Aurora Road
Twinsburg, Ohio 44087
216-425-9171

NWDO — Northwest District Office
1035 Devlac Grove Drive
Bowling Green, Ohio 43402
419-352-8461

SEDO — Southeast District Office
2195 Front Street
Logan, Ohio 43138
614-385-8501

SWDO — Southwest District Office
7 East Fourth Street
Dayton, Ohio 45402
513-449-6357

Contact your local municipal water utility for a demonstration of how a water meter works and records usage. Have the students locate their home water meters. Determine how much water is used by the family in one week. Make a list of all the water uses in the home. Do a water audit to spot waste. Plan ways the family can conserve water. Measure the amount of water used during a week when the family was following the conservation plan. Discuss results.

Have the students compile a list of items in their homes that are considered hazardous or that create hazardous wastes when produced and/or disposed of. (Pesticides, paints, solvents, and motor oil are all considered hazardous.) What hazardous substances do the items contain? Discuss the effects that disposal of such hazardous wastes may have. Discuss the possibility of reducing demand for some of these items. Discuss proper disposal practices. Are there alternatives?

Have the students put together a bulletin board on various topics dealing with the environment (Use pictures, cartoons, newspaper articles.)

Have the students bring in clear plastic bottles and wide-mouthed glass jars. Tie a piece of cheese cloth over the tops of the bottles, invert them, and cut off the bottoms. Fill the bottles 2/3 full with different types of soil or rock material such as sand, clay, loam, limestone, gravel, or soil. Prop the bottles up so that they will drain into the jars. Pour about 1/2 cup water into each bottle. Record the time it takes for the water to filter through the soils and begin dripping into the jars. Did some soils allow water to filter faster than others? How clear is the water? Which soil type better retains water?

Have the students collect 10 or 12 natural things to make into a mobile. They will need some sticks (one longer and three shorter ones), preferably ones that are already on the ground. Arrange the articles on the sticks so they do not touch each other when rotating. You will need heavy string, scissors, glue.

Have the students pour some motor oil into a large pan of water. Have them attempt to clean out the oil using various substances, such as sawdust, string, cotton, straw, etc. Have them dip a feather into the oil to get an idea of what happens to birds affected by oil spills. If some of the oil is finally retrieved, ask the students how it might be recycled. (Some service stations accept used motor oil).

Have the students tape cardboard coated with a thin layer of vaseline to various objects in the community or around the school. In a few days, have them remove the cards and check them for the amount of particles trapped in the vaseline. Have them determine where they think the particles are coming from. Help them decide if the particles are harmful to humans and animals. Discuss devices that can be used to reduce air pollution and the expense of installing these devices in cars and on smoke stacks.

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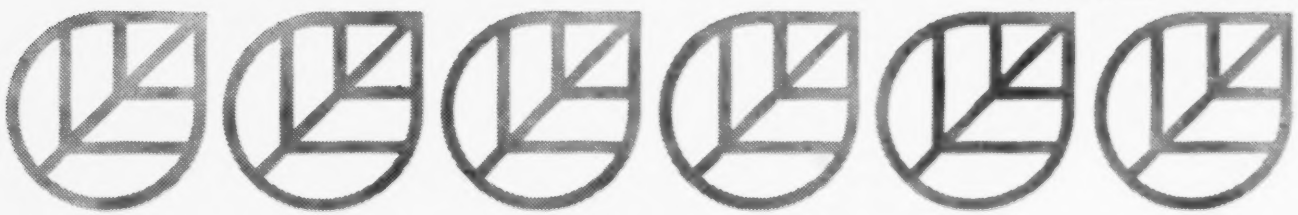

Bring in and display objects that carry the recycling symbol. Research recycling centers in your area and see what the going rates are for recyclable materials. Discuss the benefits of recycling.

How many trash bags of garbage do you fill in one week? Practice recycling and waste reduction and count again. Where does your waste go? Use a shoe box to represent a landfill and have each student put "waste" in it. What happens when the box is full? Discuss the problem of dwindling landfill capacity.

Sponsor a Career Day with speakers from environmental fields.

Publication of the Ohio EPA
Public Interest Center

For more information, please call:

Columbus: (614) 466-8508
Elsewhere in Ohio: 1-800-282-0270

Total copies printed: 2,500
Unit cost: $.9768
Publication date: 2/87
Includes paper costs

OhioEPA
State of Ohio Environmental Protection Agency

Richard F. Celeste, Governor
Warren W. Tyler, Director